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ACCELERATION OF THE DESIGNATION OF INTERSTATE AIR QUALITY CONTROL REGIONS

Public Health Service
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May 1970

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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PREFACE

President Nixon, in his Environmental Message of February 10, 1970, called for acceleration of the designation of interstate air quality control regions. On that same date, H.R. 15848 was introduced in Congress to amend the Clean Air Act. A similar bill, S. 3466, was introduced in the Senate on February 18. H.R. 15848 and S. 3466 emphasized the need for intergovernmental cooperation in dealing with interstate air pollution problems. Part I of this report discusses the rationale for the current designation procedures. Part II discusses the impact of H.R. 15848 and S. 3466 proposals upon the regional designation procedure, and concludes with a proposal for the designation of all remaining interstate air quality control regions. Appendices to this report list the areas and population affected in the remaining interstate regions, and include the findings of a study on the impact of regional designation upon the nation's total population.

PROPOSAL TO ACCELERATE THE DESIGNATION OF INTERSTATE AIR QUALITY CONTROL REGIONS

PART I. INTRODUCTION

> For the purpose of establishing ambient air quality standards pursuant to section 108, and for administrative and other purposes, the Secretary, after consultation with appropriate State and local authorities shall, to the extent feasible, within 18 months after the date of enactment of the Air Quality Act of 1967 designate air quality control regions based on jurisdictional boundaries, urban-industrial concentrations, and other factors including atmospheric areas necessary to provide adequate implementation of air quality standards. The Secretary may from time to time thereafter, as he determines necessary to protect the public health and welfare and after consultation with appropriate State and local authorities, revise the designation of such regions and designate additional air quality control regions. The Secretary shall immediately notify the Governor or Governors of the affected State or States of such designation.
>
> Section 107(a)(2), Clean Air Act, as amended.

The Clean Air Act, as amended, directs the Secretary of Health, Education, and Welfare to designate air quality control regions throughout the Nation. To carry out this directive, 32 of the largest and most severely polluted urban areas of the Nation were announced in June 1968 for subsequent designation as air quality control regions. An additional 25 areas were announced for designation in March 1969. These 57 air quality control regions will include portions of all of the 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands.

The Clean Air Act, as amended, requires the States, a portion of whose geographic area is included in an air quality control region, to adopt ambient air quality standards for that region or

their portion thereof and to adopt an implementation plan to meet these air quality standards within a "reasonable period of time." The concept of adoption of ambient air quality standards and basing emission restrictions upon the degree of improvement required from existing ambient air quality levels was an unfamiliar procedure to almost all of the States affected by air quality control region designations. Such a procedure requires adequate knowledge of existing ambient air quality levels, detailed emission information from a wide variety of sources, and information on prevailing meteorologic conditions which would affect the diffusion and transport of emitted pollutants. Since most States had not made an emission inventory for the entire metropolitan area, NAPCA had to compile existing data and extrapolate the results into a format useable for diffusion model analysis.

Consequently, the designation of air quality control regions in areas among the initial list of 57 central cities has proceeded at a slow and deliberate pace. Since the information required to make a determination of regional boundaries is similar to that required by the States for purposes of adopting ambient air quality standards and implementation plans, the collection, analysis, and dissemination of data by NAPCA in the form of a formal consultation report was considered a necessary step in assisting State officials in carrying out their responsibilities under the Act.

A detailed report was developed for each region. This report evaluates the engineering and urban factors used in selecting region boundaries and provides the State and local agencies with useful information for undertaking their role in the regional approach. In developing a Consultation Report on each region, an inventory of area and point source emissions was obtained from existing reports, extensive demographic data was gathered, and meteorologic data was utilized so that a mathematical model could be used to predict relative pollutant concentrations.

This data gathering, coupled with the necessity of individually acquainting each Governor with the proposed procedures under the Act, precluded any regional designations prior to October 1968. As of May 1, 1970, 34 air quality control regions have been officially designated. Consultations with State and local authorities had been held in 41 areas and technical studies were underway in all but two of the areas remaining among the initial 57. It is expected that all 57 regions will be designated by the end of September 1970.

It is obvious that the designation procedure has been accelerated considerably with the passage of time--only 18 regions were designated in the first two years after the Clean Air Act was signed, but at least 40 additional regions will have been designated within the third year. Familiarity with the procedures, contract assistance, and the ability of States to produce their own technical reports have aided in this speed-up.

The present approach to the designation of regions has been successful. Governors have exhibited both an understanding of and a desire to participate in the Federal-State cooperative program, local areas have had the opportunity to relate their problems to the Clean Air Act regional designation procedures, control officials have come to understand their responsibilities, the appropriate data base for implementation plan development is in the process of being created, and standard-setting by the States has proceeded without major problems. However, the designation of 57 regions was never intended to be the end point of the air quality control region designation process.

PART II. A NEW APPROACH TO THE DESIGNATION OF REGIONS

A. INTRODUCTION

As previously indicated, the current pace of designation was deliberately chosen to bring each State into the designation process in such a way as to maximize its ability to successfully carry out its assigned role under the Clean Air Act. There has been introduced in the Congress H.R. 15848 which provides for the establishment of National Air Quality Standards in lieu of a regional designation procedure. In his Environmental Message of February 10, 1970, President Nixon called for an accelerated designation of those regions which would be interstate in nature. The following sections of this report detail the proposed NAPCA policy under legislative amendment of the Clean Air Act, concluding with an accelerated approach for the designation of the remaining interstate air quality control regions.

B. IMPACT OF AMENDED LEGISLATION

On February 10, 1970, Representatives Staggers and Springer introduced H.R. 15848 which, among other amendments to the Clean Air Act, proposed national air quality standards.* Should this legislation be approved without modification, the Secretary of DHEW must issue National Air Quality Standards and the States would develop implementation plans for all areas within their

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*A companion bill, S.3466, was introduced in the Senate on February 18, 1970.

boundaries within six months. These implementation plans must set forth priorities and also include stationary source emission standards. If a State fails to adopt an implementation plan, DHEW will have authority to issue such a plan. Section 109 of H.R. 15848 also provides that States may adopt more stringent standards if desired. In interstate areas designated by DHEW, implementation plans must provide for intergovernmental cooperation.

Passage of H.R. 15848 will require certain policy changes by NAPCA related to the designation of air quality control region procedures. It will be NAPCA policy to set those air quality control regions that have been designated at the time of the bill's passage as top priority regarding implementation plans. Standards and implementation plans already adopted, or being processed, for existing air quality control regions would be reviewed for consistency under the new procedures. Furthermore, NAPCA will continue the process of designating the original 57 regions (if any remain to be designated at the time of the bill's passage) in order to afford every State the benefits of the mechanisms of the Clean Air Act. Such regional mechanisms involve the determination of the areas that must be considered in an implementation plan and the development of emission restrictions related to ambient air quality standards for the area.

Such a proposed change in existing legislation would place all of the Nation's 207 million persons and all existing and potential

sources of air pollution under joint Federal-State supervision. In this manner, a system for the control of air pollution would exist not only in presently urbanized areas, but also in those areas where urban and industrial development has not yet occurred.

C. SUGGESTED APPROACH TO FUTURE REGION DESIGNATIONS

The deliberate procedure of cooperating with State and local control officials in their joint responsibilities under the Clean Air Act was accomplished by detailed Consultation Reports and workshops. Such a procedure has been, and will be, used during the establishment of the announced 57 air quality control regions. This approach to the designation of regions has been very successful as demonstrated in the 41 Consultations already held with State and local officials. Data compiled in the Consultation Reports is proving most useful to State and local control officials in developing implementation plans for designated regions. Those States involved in the early designations are now developing, however, the capability to handle many facets of regional air pollution control, i.e., designation, standard-setting, and implementation plan responsibilities. Functions such as meteorological data analysis, promulgation of regulations, and emission inventory requirements are much clearer as a result of this deliberate approach to regional designation. Completing designation of the initially announced 57 regions will allow all State control agencies to strengthen these necessary capabilities.

Areas of particular concern to NAPCA following the involvement

of all States in at least one air quality control region will be those that are interstate in nature. President Nixon emphasized in his February 10, 1970, Environmental Message that designation of interstate air quality control regions should be greatly accelerated. Furthermore, H.R. 15848 requires that implementation plans in interstate areas have provisions for intergovernmental cooperation. Therefore, NAPCA will place priority in its new approach to accelerate regional designation in interstate problem areas.

On April 5, 1970, NAPCA announced 34 additional areas of the Nation that appear to require interstate air quality control regions. For the 21 regions located in States which have already had at least one designated air quality control region, or in which a Consultation has been held leading to a region's designation, boundaries will be proposed and announced in the Federal Register within 45 days of the press release. As regions are designated in the remaining States, the interstate areas within these States will shortly thereafter have boundaries proposed.

To establish boundaries for these interstate areas on an accelerated schedule, NAPCA will develop a data base for each area. Much of this data (demographic, meteorological, and jurisdictional) was accumulated during the development of the Consultation Reports for the initial 57 regions. NAPCA will not publish its findings supporting interstate region boundary recommendations in a formal Consultation Report. The States involved are presently

aware of the basic factors that NAPCA examines in developing its boundary proposals and are thus able to relate to the Federal proposals either in terms of restriction or expansion of the region. When NAPCA presents its boundary proposals at the Consultation, data will be available concerning the factors that led to its proposal.

It is planned to hold consultations in each of the ten DHEW Regional Offices to present NAPCA boundary proposals for interstate air quality control regions located in the States within each Region. Should an interstate region be involved in two different DHEW Regions, a single Regional Office will be selected as the Consultation site. At the time of announcing proposed boundaries for interstate regions in the Federal Register, the date and site for each Consultation will be announced. A limited mailing list will be developed for each interstate region, notifying appropriate State and local officials.

Designation of the initial 57 regions, the remaining interstate regions, and regions recommended by State Governors, will approximate 100 air quality control regions. A study provided in Appendix II of this report shows the problem to be much greater in scope than these 100 regions. To extend the benefits of regional air pollution control to 90 percent of the Nation's population would require the designation of approximately 200 additional regions. The remaining ten percent of the nation's population reside upon a land area covering over one-half of the United States. These people could be protected through the regional

approach by expanding and adding to the approximately 300 regions previously described. The outcome of present legislative proposals in extending the Clean Air Act will determine the approach in accomplishing this goal. Should the decision be to designate air quality control regions in these remaining areas, NAPCA proposes that the accelerated designation approach described in this report for interstate areas be extended to the remaining intrastate areas. A similar approach of holding one consultation for each DHEW Region can be used for these intrastate regions. Such an approach would permit the designation of all remaining air quality control regions in the Nation by early 1971.

APPENDICES

I. REMAINING INTERSTATE AREAS REQUIRING AIR QUALITY CONTROL REGION DESIGNATION

II. IMPACT OF REGIONAL DESIGNATION UPON THE UNITED STATES POPULATION

APPENDIX I.

REMAINING INTERSTATE AREAS REQUIRING AIR QUALITY CONTROL REGION DESIGNATION

A. AREAS IN STATES HAVING EITHER DESIGNATED AQCR'S OR CONSULTATIONS HELD ON AN AQCR BEFORE APRIL 1, 1970. Total Population = 9,010,600

1. Allentown-Bethlehem-Easton (Pa.) -- Phillipsburg (N.J.), Pop. 660,200.
2. Binghamton (N.Y.) -- (Pa.), Pop. 353,400.
3. Briston (Va.) -- Johnson City (Tenn.), Pop. 528,600
4. Columbus (Ga.) -- Phenix City (Ala.), Pop. 431,900
5. Cumberland (Md.) -- Keyser (W. Va.), Pop. 146,500
6. Duluth (Minn.) -- Superior (Wis.), Pop. 347,800
7. Erie (Pa.) -- Ashtabula (Ohio), Pop. 436,500
8. Evansville (Ind.) -- Owensboro-Henderson (Ky.), Pop. 460,600
9. Florence (Ala.) -- Corinth (Miss.) -- (Tenn.), Pop. 210,100
10. Fort Smith (Ark.) -- Muskogee (Okla.), Pop. 315,700
11. Huntington (W. Va.) -- Ashland (Ky.) -- Portsmouth-Ironton (Ohio), Pop. 435,900
12. Joplin (Mo.) -- Northeast Oklahoma (Okla.) -- Southeast Kansas (Kan.) -- Fayettesville (Ark.), Pop. 586,400
13. La Crosse (Wis.) -- Winona (Minn.), Pop. 213,500.
14. Menominee-Escanaba (Mich.) -- Marinette (Wis.), Pop. 141,300
15. Mobile (Ala.) -- Pensacola-Panama City (Fla.) -- Gulfport (Miss.), Pop. 1,174,700
16. Paducah (Ky.) -- Cairo (Ill.), Pop. 123,300
17. Parkersburg (W. Va.) -- Marietta (Ohio), Pop. 275,300
18. Rockford (Ill.) -- Janesville-Beloit (Wis.), Pop. 563,500
19. Scottsboro (Ala.) -- Jasper (Tenn.), Pop. 119,500
20. South Bend-Elkhart (Ind.) -- Benton Harbor (Mich.), Pop. 822,900
21. Youngstown (Ohio) -- Sharon (Pa.), Pop. 663,000

B. INTERSTATE AREAS FOR LATER DESIGNATION. Total Population = 5,190,200

1. Augusta (Ga.) -- Aiken (S.C.), Pop. 360,100
2. Berlin (N.H.) -- Rumford (Me.), Pop. 77,500
3. Davenport (Iowa) -- Rock Island-Moline (Ill.), Pop. 515,900
4. Douglas (Ariz.) -- Lordsburg (N.M.), Pop. 118,700
5. Dubuque (Iowa) -- (Ill.) -- (Wis.), Pop. 196,100
6. Keokuk (Iowa) -- (Mo.) -- (Ill.), Pop. 127,800
7. Lewiston-Moscow (Ida.) -- Clarkston-Pullman (Wash.), Pop. 101,100
8. Norfolk (Va.) - Elizabeth City (N.C.), Pop. 1,133,500
9. Savannah (Ga.) -- Beaufort (S.C.), Pop. 332,500
10. Northwest Louisiana (La.) -- Northeast Texas (Tex.) -- Southeast Oklahoma (Okla.) -- Southeast Arkansas (Ark.), Pop. 1,320,000
11. Sioux City (Iowa) -- (Neb.), Pop. 127,200
12. Spokane (Wash.) -- Coeur d'Alene (Ida.), Pop. 293,700
13. Northeast Louisiana (La.) -- Southeast Arkansas (Ark.) -- Vicksburg (Miss.), Pop. 486,100

TOTAL POPULATION OF ALL REMAINING INTERSTATE AREAS = 14,200,800

APPENDIX II.

IMPACT OF REGIONAL DESIGNATION UPON THE UNITED STATES POPULATION

A. INTRODUCTION

Designation of the initially-announced 57 regions and the remaining interstate areas will place 117.7 million or 57% of the Nation's inhabitants within air quality control regions. To better understand the total population-pollution problem, the following study was conducted to assess the impact of a total regional designation approach. The accelerated designation procedure discussed earlier in this report could easily be adopted in designating these additional intrastate regions. Following a brief discussion of the terminology used to define statistical areas, this section will discuss the urban-rural composition of the Nation's population. Data on the population and area likely to be affected by the designation of the initial 57 air quality control regions will be analyzed. Finally, the results of a study of the remaining urban areas of the United States which may benefit from the designation of air quality control regions are presented.

B. POPULATION DISTRIBUTION WITHIN THE UNITED STATES

1. Terminology

To understand the graphs and tables presented in this report, a brief review of statistical terminology is helpful. The most

frequently used statistical definition of a metropolitan area is the Standard Metropolitan Statistical Area (SMSA). A SMSA can be briefly defined as a county or group of contiguous counties that contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. In addition to the county or counties containing such a city or cities, contiguous counties are included in a SMSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, SMSA's consist of towns, rather than counties. New England towns are primary subdivisions of counties and are considered to be the major units of local government. SMSA's are defined by the Bureau of the Budget and are frequently updated by population and economic studies conducted by the Bureau of the Census. In the areas surrounding New York City and Chicago, combinations of adjacent SMSA's have been defined as Standard Consolidated Areas (SCA).

The terms "urbanized areas" and "urban places" are often confused. The Bureau of the Census defines an "urbanized area" as an area containing at least one city with 50,000 or more inhabitants and the surrounding closely-settled incorporated and unincorporated areas that meet specified criteria of urbanism. The boundaries of an urbanized area, contrary to those of a SMSA, do not follow political boundaries, and change from one census to another. "Urban places," however, include all incorporated

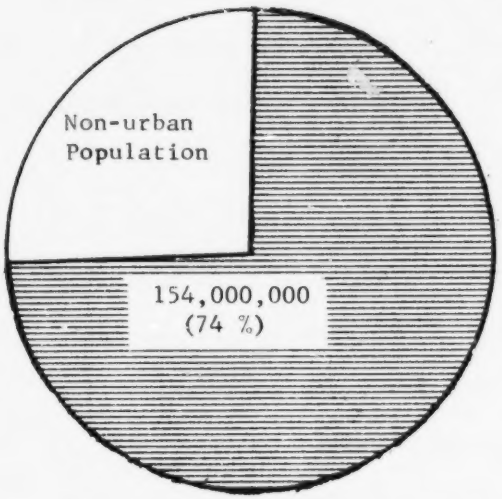
and unincorporated places of 2,500 inhabitants or more, and the towns, townships, and counties classified as urban in that census.

2. Locational Characteristics

It is a well-known fact that the majority of the population of the United States resides on a very small part of the total U.S. land area. The major metropolitan areas of the Nation cover less than 10 percent of the land area, while containing nearly two-thirds of the total United States population. Thus, an effort to direct the establishment of air quality control regions in major urban areas of the Nation will affect a large proportion of U.S. population. Further examination of the population distribution in the country reveals, however, that a substantial number of urban residents live outside of metropolitan areas. Establishment of air quality control regions may be necessary in many of these non-metropolitan urban centers. Although the total number of people affected by region designations in these urban areas will be relatively small compared to those in metropolitan regions, the number of individual air quality control regions will be large. Discussion of potential air quality control region locations will appear later in this report. The following section will discuss the accompanying graphs pertaining to nationwide population distribution.

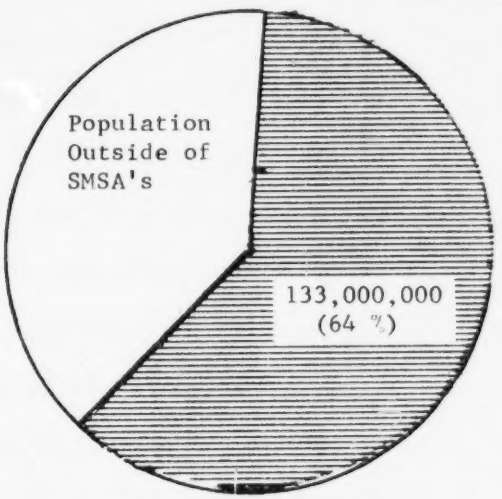
Figure 1 consists of three graphs showing locational characteristics of the United States population. It is presently estimated that over 74 percent of the United States population resides in urban places. This amounts to about 154,000,000 persons

FIGURE ONE. LOCATIONAL CHARACTERISTICS OF THE UNITED STATES POPULATION

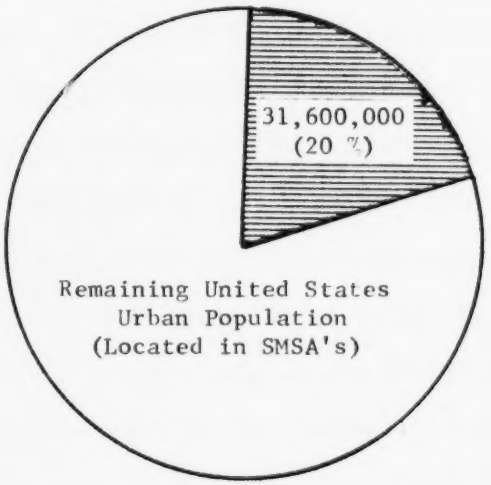


United States Population Residing in Urban Areas

15,400,000
Rural (11.5 %)



United States Population Residing in Standard Metropolitan Statistical Areas



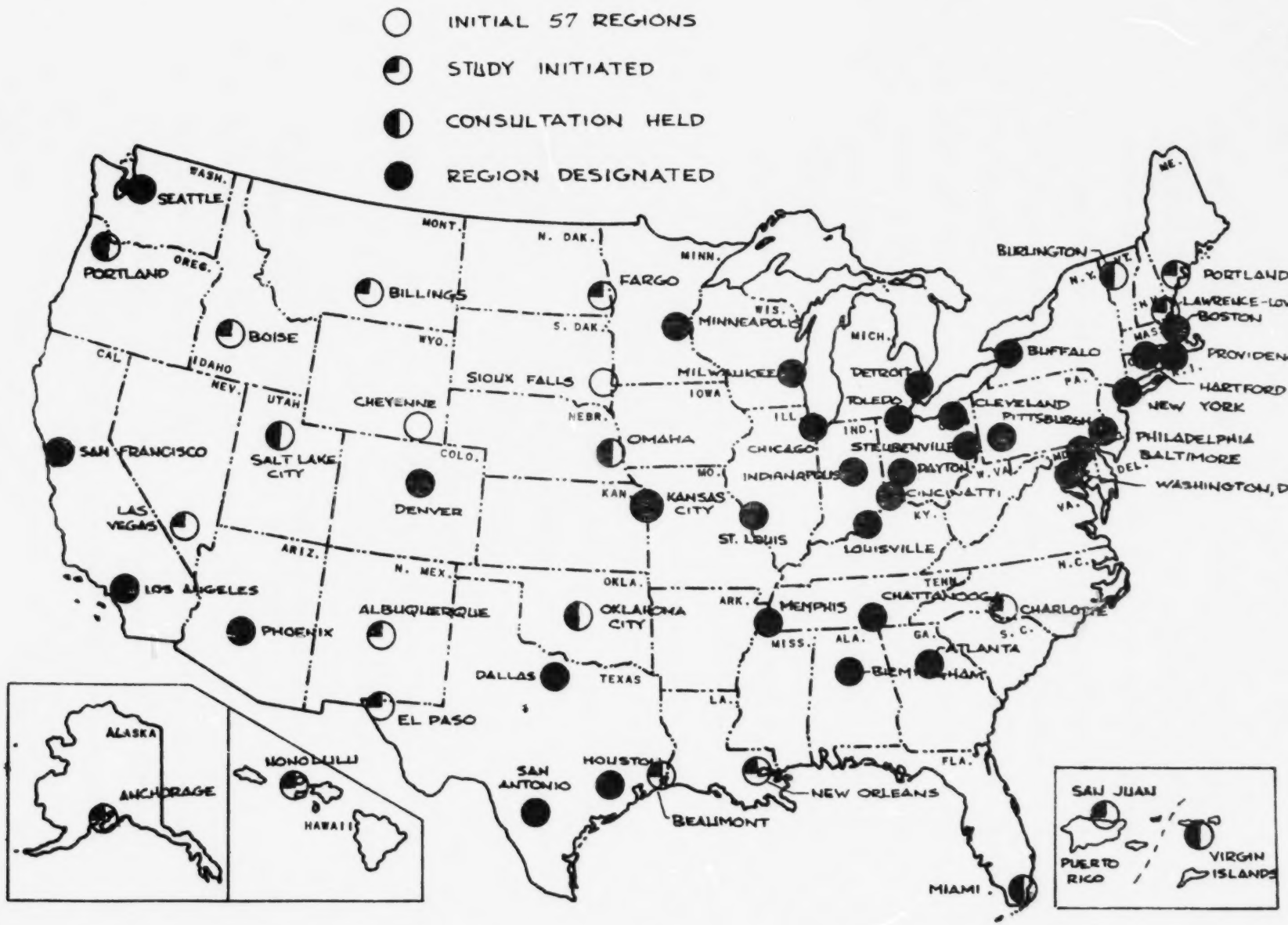
United States Population in Urban Areas NOT located within an SMSA

residing in places of over 2,500 population. Nearly 133,000,000 persons, or 64 percent of the total population, reside within SMSA's. SMSA's contain 362,725 square miles or about 10 percent of the United States land area, resulting in an overall density of 322 persons per square mile. This relatively low density is chiefly accounted for by the characteristics of a SMSA's definition. Since most SMSA's are comprised of entire counties, many square miles of their territory are used for non-urban purposes.

Since the number of people residing in SMSA's is not equal to the total United States urban population and since some residents within SMSA's are non-urban by Census Bureau definition, it is estimated that 31,600,000 persons, or 20.5 percent of the U.S. urban population, live in urban places outside of SMSA's. This estimate, based on Census Bureau data and projected to 1969 figures, is shown on the third graph of Figure 1. Further study shows that 15.4 million persons living within the boundaries of SMSA's are classified as rural. The designation of air quality control regions on a strictly SMSA basis would thereby exclude over 20 percent of the Nation's urban residents from the benefits of regional air pollution control.

C. UNITED STATES POPULATION AFFECTED BY THE DESIGNATION OF THE INITIAL FIFTY-SEVEN AIR QUALITY CONTROL REGIONS

The map on page 6 shows the current status of designation of air quality control regions. As of May 1, 1970, 34 regions had been officially designated; consultations had been held in seven additional areas, and studies were underway in 14 other areas.



STATUS OF AQCR DESIGNATION - MAY 1, 1970

Table 1 and graphs in Figure 2 show the population and land area which may be affected by the designation of the first 57 air quality control regions. Since not all of the regions had been designated as of this writing, the figures on individual regions are merely estimates. The data for regions which have not been designated was determined by examining county population figures, SMSA boundaries, and preliminary emission inventory data. Boundaries for the regions which have not been designated may change when diffusion model results and/or jurisdictional studies are completed. The totals in Table 1, however, are unlikely to change significantly.

It appears that approximately 107 million persons and 223,000 square miles will be affected by the designation of the first 57 air quality control regions. This accounts for about 51.6 percent of the total United States population and 6 percent of its land area. It is further estimated that 80.5 million, or 63.3 percent of the total United States urban population, will reside within the initial 57 regions. It is obvious from these figures that more than 57 air quality control regions would be necessary to cover most of the Nation's urban population.

The first 32 air quality control regions are anticipated to include 90.5 million persons and 142,000 square miles in 28 States. Thus, shortly after the beginning of 1970, 44 percent of the total United States population and 3.9 percent of the total United States land area will be affected by designation of air quality control regions. By the end of 1970, another 16.6 million persons and

TABLE 1

ESTIMATED POPULATION AND AREAS OF INITIAL 57 AIR QUALITY CONTROL REGIONS

AIR QUALITY CONTROL REGION	AREA (Square Miles)	POPULATION (1969 ESTIMATE)	STATE(S) AND COMPONENT POPULATION	CUMULATIVE TOTAL OF AFFECTED STATES
National Capital (Washington, D.C.)	2,353	2,818,500	D.C..... 815,000 Maryland.... 1,095,000 Virginia.... 908,500	3
New York Metropolitan	4,042	16,357,600	New York.... 10,530,000 New Jersey.. 5,058,000 Connecticut. 769,600	6
Chicago Metropolitan	4,655	7,539,000	Illinois.... 6,920,000 Indiana..... 619,000	8
Philadelphia	4,584	5,557,000	Pennsylvania 3,783,000 New Jersey.. 1,309,000 Delaware.... 375,000	10
Denver	2,207	1,113,500	Colorado	11
Los Angeles	9,200	9,735,000	California	12
St. Louis	3,567	2,322,600	Missouri 1,780,000 Illinois 542,600	13
Boston	1,327	3,039,000	Massachusetts	14
Cincinnati	2,707	1,624,400	Ohio..... 1,346,600 Kentucky.... 243,500 Indiana..... 34,900	16
San Francisco Bay Area	6,995	4,570,000	California	16
Greater Cleveland	3,495	3,346,000	Ohio	16
Pittsburgh	4,868	2,685,000	Pennsylvania	16
Niagara Frontier (Buffalo)	1,590	1,350,000	New York	16
Kansas City	4,210	1,446,800	Missouri.... 982,800 Kansas..... 464,000	17
Detroit-Port Huron	2,686	4,337,000	Michigan	18
Baltimore	2,259	2,023,000	Maryland	18

ESTIMATED POPULATION AND AREAS OF INITIAL 57 AIR QUALITY CONTROL REGIONS
(cont.)

AIR QUALITY CONTROL REGION	AREA (Square Miles)	POPULATION (1969 ESTIMATE)	STATE(S) AND COMPONENT POPULATION	CUMULATIVE TOTAL OF AFFECTED STATES
Hartford-Springfield-New Haven	3,095	2,410,000	Connecticut... 1,830,000 Massachusetts. 580,000	18
Indianapolis	3,080	1,059,000	Indiana	18
Minneapolis-St. Paul	2,820	1,739,000	Minnesota	19
Milwaukee	3,010	1,772,000	Wisconsin	20
Providence	2,194	1,432,800	Rhode Island.. 908,000 Massachusetts. 524,800	21
Seattle-Tacoma	6,298	1,799,500	Washington	22
Louisville	908	808,000	Kentucky..... 685,000 Indiana 123,000	22
Dayton	2,714	1,038,000	Ohio	22
Phoenix-Tucson	28,611	1,336,000	Arizona	23
Houston-Galveston	7,810	2,018,100	Texas	24
Dallas-Forth Worth	7,997	2,187,600	Texas	24
San Antonio	2,527	889,200	Texas	24
Birmingham	5,339	924,400	Alabama	25
Toledo	1,519	679,000	Ohio..... 562,000 Michigan..... 117,000	25
Steubenville-Weirton-Wheeling	2,516	475,100	Ohio..... 301,600 West Virginia. 173,500	26
Chattanooga	1,330	333,000	Tennessee..... 247,000 Georgia..... 86,000	28
TOTALS FOR FIRST 32 A.Q.C.R.	142,513	90,585,800	.....	28

ESTIMATED POPULATION AND AREAS OF INITIAL 57 AIR QUALITY CONTROL REGIONS (cont.)

*Region not yet designated. All data based on estimated boundaries.

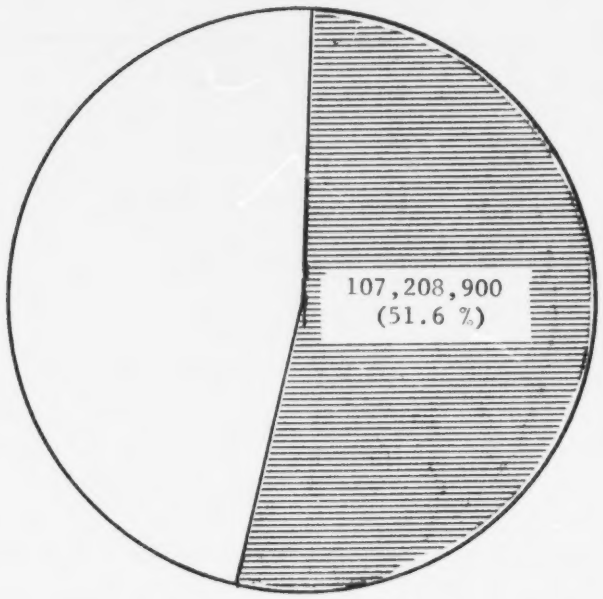
AIR QUALITY CONTROL REGION	AREA (Square Miles)	POPULATION (1969 ESTIMATE)	STATE(S) AND COMPONENT POPULATION		CUMULATIVE TOTAL OF AFFECTED STATES
Atlanta	2,261	1,384,900	Georgia		28
Memphis	1,839	815,500	Tennessee.....	730,000	30
			Arkansas.....	51,500	
			Mississippi...	34,000	
Portland*	10,952	1,390,500	Oregon.....	1,212,500	31
			Washington....	178,000	
Salt Lake City*	3,656	814,000	Utah		32
New Orleans*	2,269	1,112,400	Louisiana		33
Miami*	5,284	1,955,000	Florida		34
Oklahoma City*	4,280	695,600	Oklahoma		35
Omaha*	3,564	607,600	Nebraska.....	513,600	37
			Iowa	94,000	
Honolulu*	595	775,000	Hawaii		38
Beaumont-Port Arthur*	2,207	356,700	Texas		38
Charlotte*	3,088	740,000	North Carolina	609,000	40
			South Carolina	131,300	
Portland*	1,880	303,000	Maine		41
Albuquerque*	3,074	344,000	New Mexico		42
Lawrence-Lowell-Manchester*	4,903	1,016,100	Massachusetts.	420,000	43
			New Hampshire.	596,100	
El Paso*	4,862	438,000	Texas.....	366,000	43
			New Mexico....	72,000	
Las Vegas*	7,874	250,000	Nevada		44
Fargo-Moorehead*	2,794	115,500	North Dakota..	71,000	45
			Minnesota.....	44,500	

ESTIMATED POPULATION AND AREAS OF INITIAL 57 AIR QUALITY CONTROL REGIONS (cont.)

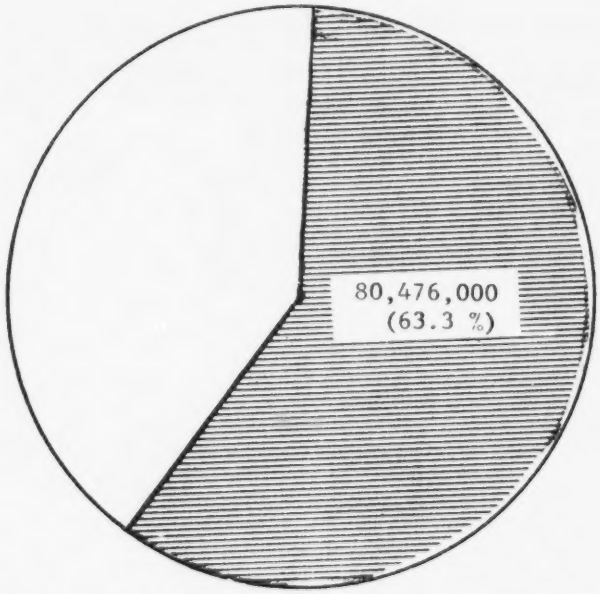
*Region not yet designated. All data based on estimated boundaries.

AIR QUALITY CONTROL REGION	AREA (Square Miles)	POPULATION (1969 ESTIMATE)	STATE(S) AND COMPONENT POPULATION	CUMULATIVE TOTAL OF AFFECTED STATES
Boise*	2,023	173,900	Idaho	46
Billings*	2,642	82,000	Montana	47
Sioux Falls*	1,389	108,000	South Dakota	48
Cheyenne*	2,703	58,000	Wyoming	49
Anchorage*	2,261	109,000	Alaska	50
Burlington*	533	85,000	Vermont	51
Puerto Rico*	3,435	2,827,400	Puerto Rico	52
Virgin Islands*	133	66,000	Virgin Islands	53
TOTALS FOR SECOND 25 A.Q.C.R.	80,501	16,623,100	.....	25
TOTALS FOR ALL 57	223,018	107,208,900	.....	53

FIGURE TWO. UNITED STATES POPULATION AFFECTED BY AIR QUALITY CONTROL REGION DESIGNATION



United States Population Residing in the Initial 57 Air Quality Control Regions



United States Urban Population Residing in the Initial 57 Air Quality Control Regions

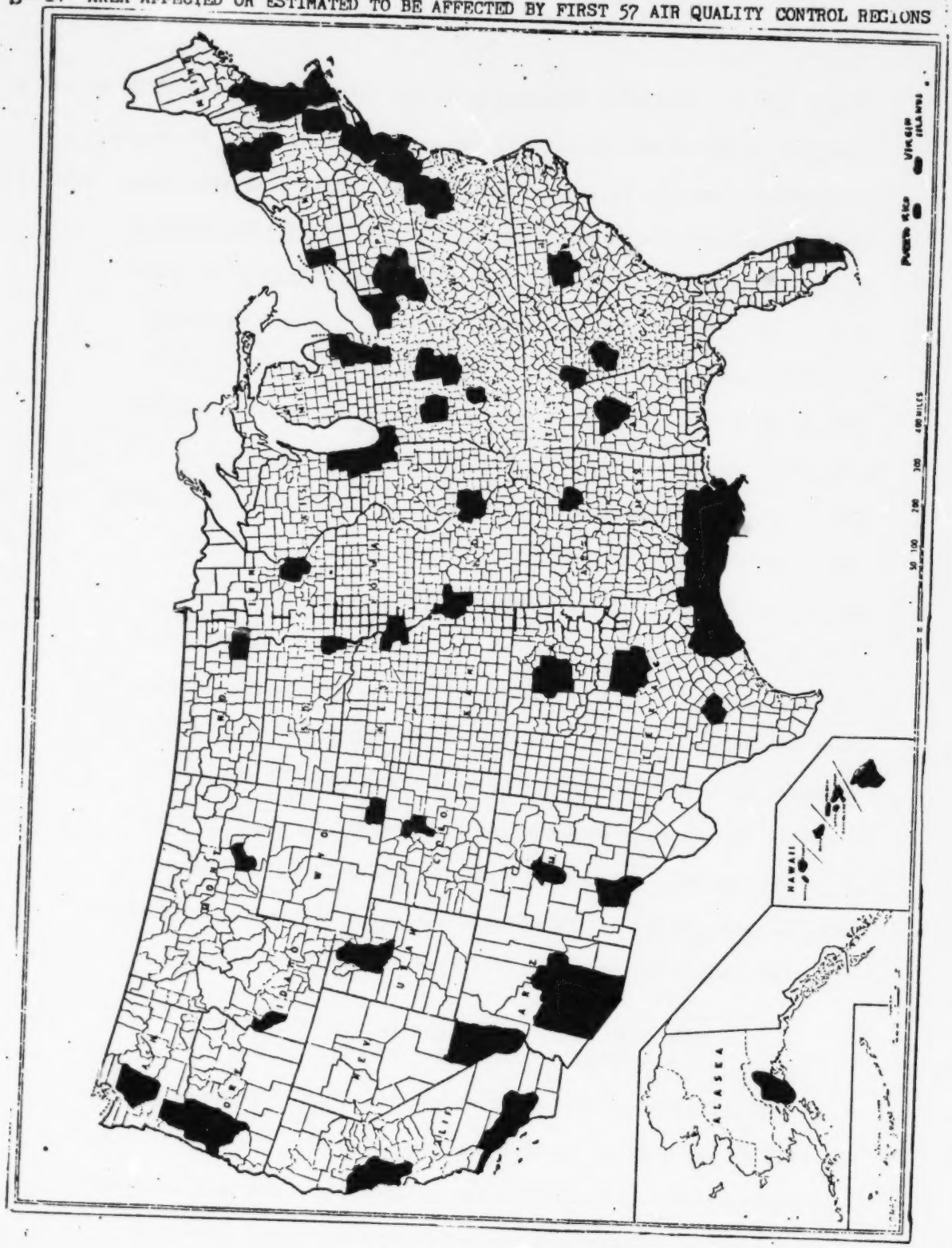
79,000 square miles will probably be added through the designation of the 25 remaining areas of the initial 57 announced regions. All 50 States, Puerto Rico, and the Virgin Islands will be involved at this time. NAPCA has recently published a document entitled Manual for the Development of State Recommendations for Air Quality Control Regions to stimulate State action toward the establishment of regions in areas beyond the announced list of 57. This document instructs the States as to how they may recommend to NAPCA air quality control region boundaries. This procedure is designed to involve the States in the designation process at an earlier date, and to place the responsibility for report writing on the States. At the beginning of 1970, two regions had officially requested this procedure: Reno, Nevada, and the Four Corners area by the State of New Mexico. It does not appear likely, however, that a significant portion of the urban population requiring designation will be affected by this expanded policy during the next 12 months.

The map on page 14 shows the area expected to comprise the first 57 regions. It can be seen that the majority of these regions are located in the heavily urbanized Northeast and Midwest, but that large land areas are affected in the Western States.

D. REMAINING AREAS OF THE UNITED STATES REQUIRING AIR QUALITY CONTROL REGION DESIGNATIONS

A preliminary survey has been made of areas outside of the initial 57 air quality control regions which have a potential need for designation as air quality control regions. The main goal of this survey is to determine the total problem rather than a

B-14 AREA AFFECTED OR ESTIMATED TO BE AFFECTED BY FIRST 57 AIR QUALITY CONTROL REGIONS



priority ranking among remaining regions. It is difficult, in a survey of this type, to select criteria, e.g., population size and air pollution levels, which would allow for such a priority ranking. Obviously, a city of 40,000 persons might not require a regional designation to handle its air pollution problem, i.e., a resort city; on the other hand, a community of only 10,000 persons might have several point sources causing serious air pollution levels and would thereby benefit from the designation of a region. For the purposes of this preliminary inventory, the following criteria were used:

1. All SMSA's were included within an air quality control region. By definition, a SMSA consists of a population large enough to warrant inclusion within an air quality control region.

2. Whenever two or more adjacent SMSA's appeared to have a mutual problem, they were projected to form one air quality control region.

3. Cities of 25,000 population located outside SMSA boundaries were considered to form the nucleus for an air quality control region, unless they were adjacent to a SMSA. Such cities, if they were adjacent to a SMSA, would probably be included in the same air quality control region as the SMSA.

4. Several communities whose populations totaled at least 25,000, and which were known to have mutual air pollution problems caused by either large point sources or topographic conditions, were selected as potential air quality control regions.

5. Communities expecting rapid population and industrial growth within the next ten years, i.e., planned "new towns," were included.

The results of this survey are shown in Table 2 for each State. In addition to separating interstate and intrastate regions, Table 2 also gives the number of regions by three categories--initial 57 air quality control regions, remaining SMSA's or combined SMSA's, and other major urban centers. The total of designated, announced, and potential regions is 305. The first graph in Figure 3 shows that 59 or 19 percent, of these 305 regions are expected to be interstate. Included in the interstate totals are ten tri-state and two four-state air quality control regions. These potential interstate regions are listed in Appendix I. The effect of combined SMSA-based regions can be seen by noting that the SMSA-based regions total 169, while the total number of SMSA's in the United States is 233. Within the first 57 air quality control regions are four regions that are based on the "urban nucleus" concept and thus are not part of a SMSA--Anchorage, Cheyenne, Burlington (Vermont), and the Virgin Islands. The second graph in Figure 3 shows the classification of the regions by type. The initial 57 air quality control regions consist of 19 percent of the total, the remaining SMSA-based regions 37 percent, and regions resulting from the urban nucleus concept contain the largest percentage-- 44 percent. Thus, in terms of number of regions needing designation to affect the "total" problem, non-SMSA-based regions play an important role.

TABLE II.

SUMMARY BY STATE OF ANNOUNCED AND POTENTIAL AIR QUALITY CONTROL REGIONS

STATE	INTERSTATE REGIONS			INTRASTATE REGIONS			TOTAL REGIONS
	Initial 57 A.Q.C.R.'s	Remaining S.M.S.A.'s	Other Major Urban Areas	Within Initial 57 A.Q.C.R.'s	Remaining S.M.S.A.'s	Other Major Urban Areas	
ALABAMA		2	2	1	3	2	10
ALASKA				1		1	2
ARIZONA	1		2	1		3	7
ARKANSAS	1	2			2	3	8
CALIFORNIA				2	6	8	16
COLORADO			1	1	2	4	8
CONNECTICUT	2				2	1	5
DELAWARE	1					1	2
DISTRICT OF COLUMBIA	1						1
FLORIDA		1		1	4	6	12
GEORGIA	1	3		1	2	6	13
HAWAII				1			1
IDAHO		1	1	1		2	5
ILLINOIS	2	3	2		5	6	18
INDIANA	3	2		1	4	3	13
IOWA	1	3	1		3	3	11

SUMMARY BY STATE OF ANNOUNCED AND POTENTIAL AIR QUALITY

CONTROL REGIONS, Continued

STATE	INTERSTATE REGIONS			INTRASTATE REGIONS			TOTAL REGIONS
	Initial 57 A.Q.C.R.'s	Remaining S.M.S.A.'s	Other Major Urban Areas	Within Initial 57 A.Q.C.R.'s	Remaining S.M.S.A.'s	Other Major Urban Areas	
KANSAS	1				2	3	6
KENTUCKY	2	2	1		1	1	7
LOUISIANA	1	2	0				3
MAINE			1	1		3	5
MARYLAND	1		1	1		1	4
MASSACHUSETTS	3			1	2		6
MICHIGAN	1	1	1	1	6	1	11
MINNESOTA	2	1	1	1		3	8
MISSISSIPPI	1	2	1		1	4	9
MISSOURI	2		2		1	2	7
MONTANA				1	1	5	7
NEBRASKA	1	1			1	1	4
NEVADA	1				1		2
NEW HAMPSHIRE	1		1			1	3
NEW JERSEY	2	1			1		4
NEW MEXICO	1		2	1		4	8
NEW YORK	2	1		1	4	4	12

SUMMARY BY STATE OF ANNOUNCED AND POTENTIAL AIR QUALITY

CONTROL REGIONS, Continued

STATE	INTERSTATE REGIONS			INTRASTATE REGIONS			TOTAL REGIONS
	Initial 57 A.Q.C.R.'s	Remaining S.M.S.A.'s	Other Major Urban Areas	Within Initial 57 A.Q.C.R.'s	Remaining S.M.S.A.'s	Other Major Urban Areas	
NORTH CAROLINA	1	1			5	1	8
NORTH DAKOTA	1					3	4
OHIO	3	3	1	2	3	3	15
OKLAHOMA		2	1	1	2	2	8
OREGON	1					4	5
PENNSYLVANIA	1	4		1	6	1	13
RHODE ISLAND	1						1
SOUTH CAROLINA	1	2			3	1	7
SOUTH DAKOTA	1					2	3
TENNESSEE	2		3		2	1	8
TEXAS	2	1		3	13	4	23
UTAH			1	1		1	3
VERMONT		1				1	2
VIRGINIA	1	1	1		3	3	9
WASHINGTON	1	1	1	1		5	9
WEST VIRGINIA	1	1	2		1	2	7
WISCONSIN		3	2	1	2	3	11

SUMMARY BY STATE OF ANNOUNCED AND POTENTIAL AIR QUALITY

CONTROL REGIONS, Continued

STATE	INTERSTATE REGIONS			INTRASTATE REGIONS			TOTAL REGIONS
	Initial 57 A.Q.C.R.'s	Remaining S.M.S.A.'s	Other Major Urban Areas	Within Initial 57 A.Q.C.R.'s	Remaining S.M.S.A.'s	Other Major Urban Areas	
WYOMING				1		1	2
PUERTO RICO				1			1
VIRGIN ISLANDS				1			1
TOTALS(1)	23(2)	22(3)	14(7)	32	94	120(6)	305

NOTES

(1) Total adjusted for interstate areas.

(2) Includes 5 tri-state A.Q.C.R.'s.

(3) Includes 3 tri-state S.M.S.A.'s and 1 four-state S.M.S.A.-based region.

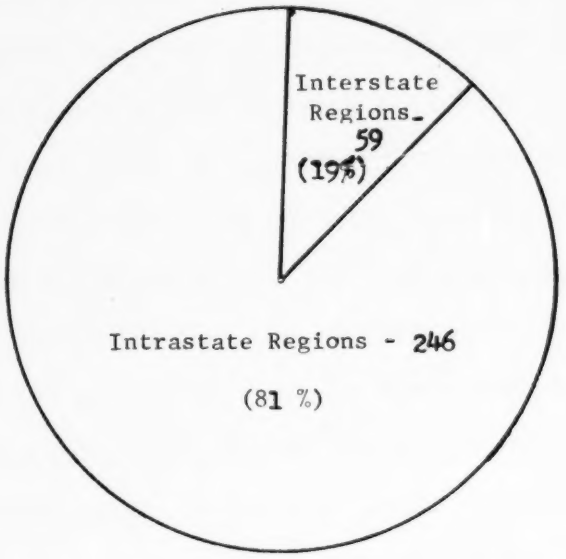
(4) Announced and potential interstate regions total 59.

(5) Announced and potential intrastate regions total 246.

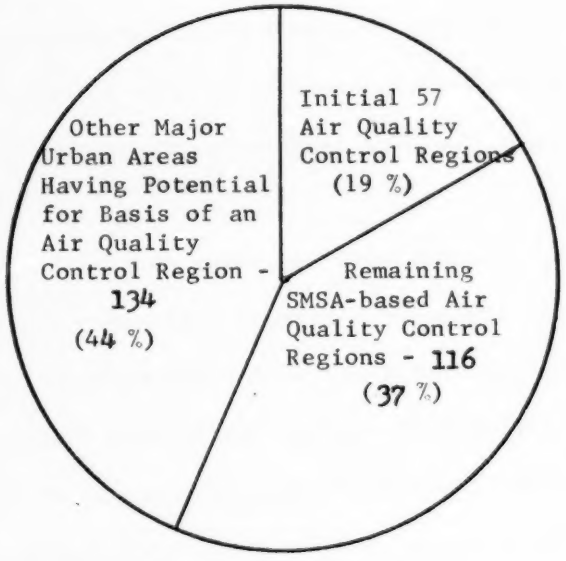
(6) Urban Areas are those areas not within or adjacent to S.M.S.A.'s and generally contain at least one city of 25,000 population.

(7) Includes 2 tri-state and 1 four-state, "urban-based" region.

FIGURE THREE. ANNOUNCED AND POTENTIAL AIR QUALITY CONTROL REGIONS



Proportion of Interstate and Intrastate Air Quality Control Regions


Other Major Urban Areas Having Potential for Basis of an Air Quality Control Region - 134 (44 %)
Initial 57 Air Quality Control Regions (19 %)
Remaining SMSA-based Air Quality Control Regions - 116 (37 %)

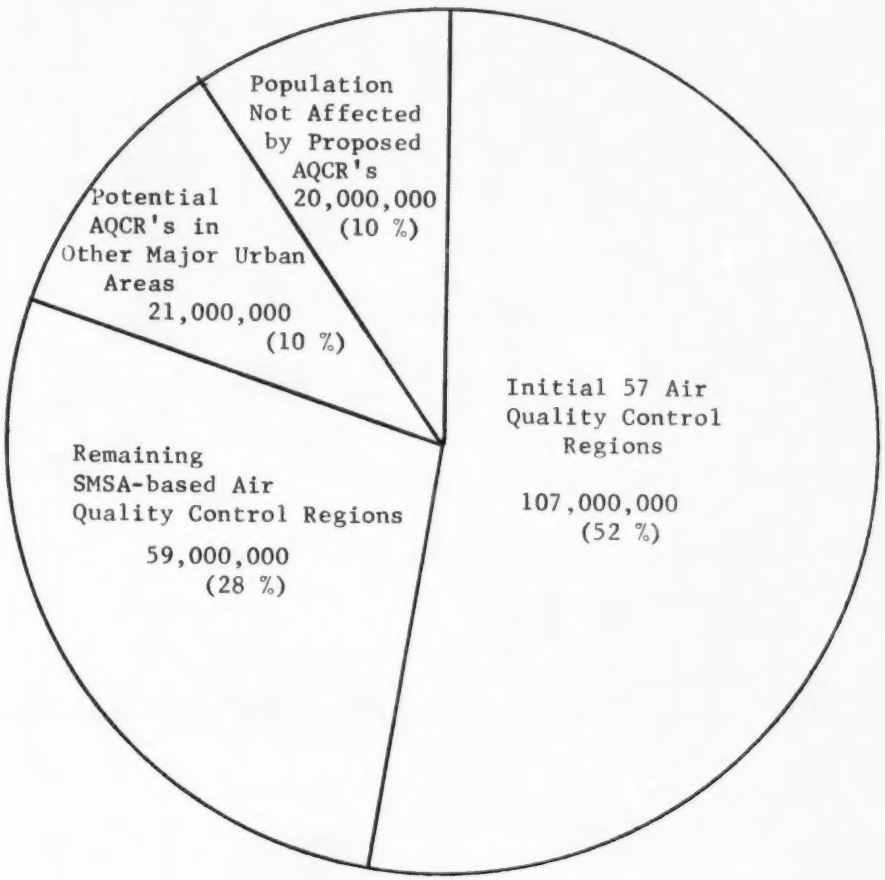
Classification of Air Quality Control Regions

Figure 4 presents the total problem in terms of the population affected by the potential 305 regions. Since the boundaries of most of these regions have not even been superficially examined, the estimates are mere approximations. The data referring to urban-nucleus regions is especially difficult to state with any certainty. It can be seen in Figure 4 that 80 percent of the total United States population will be covered by the initial 57 regions and remaining SMSA-based regions (175). It is projected that SMSA-based air quality control regions will contain 166 million persons. Thus, the urban nucleus-based regions will average 160,000 persons, and their 131 regions will affect 21,000,000 persons, or nearly 10 percent of the United States population. This indicates a definite priority for the SMSA-based regions but nevertheless shows that the urban-nucleus regions affect a substantial number of persons.

The map on page 24 shows the locations of the proposed 305 regions. No attempt is made to show boundaries on a map of this scale. The SMSA's are shaded, however, to give a better picture of the affected area. The dots indicate urban nucleus-based regions.

In conclusion, this analysis has shown that although the announced 57 air quality control regions will cover one-half of the Nation's population, the distribution characteristics of the United States population will require nearly five times as many regions if the designation process approach is used to provide full coverage to the ultimate problem area. This analysis further

FIGURE FOUR. CLASSIFICATION OF AIR QUALITY CONTROL REGIONS BY PROPORTIONS OF THE TOTAL UNITED STATES POPULATION


Population Not Affected by Proposed AQCR's 20,000,000 (10 %)
Potential AQCR's in Other Major Urban Areas 21,000,000 (10 %)
Initial 57 Air Quality Control Regions 107,000,000 (52 %)
Remaining SMSA-based Air Quality Control Regions 59,000,000 (28 %)

STANDARD METROPOLITAN STATISTICAL AREAS
AREAS DEFINED BY U.S. BUREAU OF THE BUDGET TO MARCH 1967
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BUREAU OF THE CENSUS

ANNOUNCED AND POTENTIAL AIR QUALITY CONTROL REGIONS

shows that although urban residents comprise 74 percent of the total United States population, over 20 percent of the inhabitants contained in the typical air quality control region are classified as rural. Thus, to extend the benefits of the regional designation process to all of the urban population, nearly 90 percent of the total United States population must be included in air quality control regions. A survey of the possible air quality control regions needed to accomplish this goal found that a grand total of 305 regions may eventually be required. In addition to the initial 57 air quality control regions, 116 SMSA-based areas and 134 non-SMSA urban areas appear to require air quality control region status.

Finally, it was found that it would not be difficult to extend the regional approach to the remaining 10 percent of the nation's population. This rural population segment outside the outlined 305 regions, with only 20,000,000 persons, is scattered over 50 percent of the nation's land area. However, the survey indicated that by expanding many of the regions west of the Mississippi river to include rural counties, the net addition of new regions beyond the proposed 305 would be minor. Thus, the findings of this study and the acceleration procedures discussed in the main body of this report could be used to extend the benefits of regional air pollution control to the entire land area of the United States.